



# CHEMICAL ACCIDENT PREVENTION AND THE CLEAN AIR ACT AMENDMENTS OF 1990

## FACTSHEET

**T**he Clean Air Act (CAA) makes it clear that facilities that handle hazardous substances bear the primary responsibility for ensuring their safe use. The CAA section 112(r)(1) general duty clause outlines the basic statutory principle that facilities are responsible for designing and maintaining a safe plant, identifying their hazards, and minimizing the consequences of accidental chemical releases. This clause applies to any facility that handles any hazardous substance, regardless of the quantity on site.

### CAA SECTION 112(r): BASIC REQUIREMENTS

**U**nder CAA s.112(r), EPA must:

- ◆ Publish a list of at least 100 substances and associated threshold quantities that determine who must comply with the new regulations

Preventing accidental releases of hazardous chemicals is the shared responsibility of industry, government, and the public. The first steps toward prevention are identifying the hazards and assessing the risks. Once information about chemicals is openly shared, stakeholders can work together toward reducing chemical risks to public health and the environment. Important new provisions in the Clean Air Act of 1990 advance the process of risk management planning and public disclosure of risk. The amendments, which cover a wide range of air pollution issues, include specific provisions addressing accidental releases of hazardous chemicals. These requirements will affect facilities that produce, handle, process, distribute, or store certain chemicals.

- ◆ Develop regulations and guidance for the response, prevention, and detection of accidental releases associated with these regulated substances.

Certain facilities must:

- ◆ Prepare risk management plans that include a hazard assessment, accident prevention program, and emergency response program
- ◆ Comply with other accidental release regulations that EPA may adopt.

One of the other key provisions of section 112(r) is a mandate for OSHA to establish a chemical process safety management standard for the workplace.

The CAA, under s.507, also requires that each state set up programs to provide small businesses with technical assistance on the CAA and to help them comply with the Act's regulations. By statute, these small business programs must include assistance related to accidental release prevention and detection. These programs provide information on alternative technologies, process changes, products, and methods of operation that help reduce air pollution.

## **BACKGROUND: CHEMICAL ACCIDENT PREVENTION BEFORE 1990**

**P**ublic awareness of the potential danger from accidental releases of hazardous substances has increased over the years as serious chemical accidents have occurred around the world. Public concern intensified following the 1984 release of methyl isocyanate in Bhopal, India, which killed more than 2,000 people. A subsequent chemical release in Institute, West Virginia, sent more than 100 people to the hospital and made Americans aware that such incidents can and do happen in the United States.

## **EPA'S RESPONSE TO BHOPAL**

**I**n response to this public concern and the hazards that exist, EPA began its Chemical Emergency Preparedness Program (CEPP) in 1985. CEPP was a voluntary program to encourage state and local authorities to identify hazards in their areas and to plan for potential chemical emergencies. This local planning complemented emergency response planning carried out at the national and regional levels by the National Response Team and Regional Response Teams.

The following year, Congress enacted many of the elements of CEPP in the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), also known as Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This law requires states to establish State Emergency Response Commissions and Local Emergency Planning

Committees to develop emergency response plans for each community. EPCRA also requires facilities to make information available to the public on the hazardous chemicals they have on site. EPCRA's reporting requirements foster a valuable dialogue between industry and local communities on hazards to help citizens become more informed about the presence of hazardous chemicals that might affect public health and the environment. According to OSHA requirements, workers on site also have a right to know about the hazardous chemicals to which they could be exposed.

## **MILESTONE REPORT ON SYSTEMS FOR PREVENTION**

**E**PCRA did not require facilities to establish accident prevention programs. However, under EPCRA section 305(b), EPA was required to conduct a review of emergency systems to monitor, detect, and prevent chemical accidents at facilities across the country. The final report to Congress, *Review of Emergency Systems* (EPA, 1988), concluded that the prevention of accidental releases requires an integrated approach that considers technologies, operations, and management practices, and it emphasized the importance of management commitment to safety.

## **EPA'S PREVENTION PROGRAM TAKES SHAPE**

**E**PA recognized that prevention, preparedness, and response form a safety continuum. Therefore, in 1986, EPA established its Chemical Accident Prevention Program, integrating it with the Chemical Emergency Preparedness Program. The first initiative was to begin collecting information on chemical accidents. Then EPA began working with other stakeholder groups to increase knowledge of prevention practices and encourage industry to improve safety at facilities.

Under the Chemical Accident Prevention Program, EPA developed the Accidental Release

Information Program (ARIP) to collect data on the causes of accidents and the steps facilities take to prevent recurrences. EPA also developed its Chemical Safety Audit Program to gather and disseminate information on successful practices to mitigate and prevent chemical accidents. The audit program also points out problematic practices and ways to improve them. Through the program, EPA has trained its regional staff as well as state officials on process safety and auditing techniques. Another significant component of EPA's Chemical Accident Prevention Program involves outreach to small and medium-sized enterprises, which the section 305(b) study indicated are generally less aware of risks than larger facilities. EPA has worked with a broad spectrum of stakeholder groups to determine the best ways to reach these smaller operations.

All these efforts are based on the premise that while industry bears the primary responsibility for preventing and mitigating chemical accidents, many other groups also have a role to play. Workers, trade associations, environmental groups, professional organizations, public interest groups, the insurance and financial community, researchers and academia, the medical profession, and governments at all levels can help facilities that use hazardous chemicals identify their hazards and find safer ways to operate. A number of stakeholder groups have now developed programs and guidance to assist facilities in the management of chemical hazards. Many of these safety measures can make businesses more efficient and productive.

## **CLEAN AIR ACT REQUIREMENTS: WHAT CHEMICALS ARE COVERED?**

**U**nder CAA 112(r)(3)(5), EPA must develop and publish an initial list of at least 100 substances that, in an accidental release, could cause death, injury, or serious adverse effect to human health or the environment.

To build its list, EPA considered the severity of any acute adverse health effects, the

likelihood of an accidental release, and the potential magnitude of human exposure. The threshold quantities for each chemical (which determine the facilities subject to the RMP requirements) reflect toxicity, reactivity, volatility, flammability, explosivity, and dispersibility as well as the amount known or anticipated to cause effects of concern.

On January 31, 1994, EPA promulgated a final rule on the substances and thresholds: 77 acutely toxic chemicals, 63 flammable gases and volatile flammable liquids, and Division 1.1 high explosive substances as listed by DOT. On April 15, 1996, based on concerns raised by the regulated community, EPA proposed modifications to the final rule. The modifications would clarify "flammables" so that gasoline and crude oil would not be covered; clarify "stationary source"; and make clear the exclusion of facilities handling explosives, exploration and production facilities for oil and gas, and gasoline.

It is important to note that the threshold quantity is determined by the maximum amount of a substance in a process, not the maximum quantity on site. The list rule also sets forth the requirements for petitions to the Agency to add substances to, or delete substances from, the list.

## **RISK MANAGEMENT PLANNING**

**F**or industry, chemical accident prevention has become an important way of doing business. More and more plant managers, whether they are subject to regulation or not, recognize chemical safety management as an integral part of running an efficient operation. At the same time, new CAA regulations ensure that the public can be properly informed about chemical risks in their neighborhoods, and community organizations, states, and the federal government all have become active players in helping to lower these risks.

### **RMP Basics**

EPA proposed its regulation on risk management planning on October 20, 1993. Its

requirements apply to facilities that have more than a threshold quantity of a regulated substance in a process. As mandated by the CAA, the final rule requires facilities to develop and implement a risk management program that includes a hazard assessment of the off-site consequences of releases under worst case and alternate scenarios, a prevention program, and an emergency response program. Information about the program must be documented in a risk management plan that is submitted to a central location and made available electronically to states and local planning agencies as well as the public.

## Building on Chemical Process Safety Management

These new risk management planning requirements are not unique. Rather, they form one element of an integrated approach to safety and complement closely related industry standards and practices. In the broadest sense, risk management planning relates to local emergency preparedness and response, to pollution prevention at facilities, and to worker safety. In a more focussed sense, these requirements build on OSHA's Process Safety Management Standard (issued on February 24, 1992). They also draw from the chemical safety guidelines of the Center for Chemical Process Safety of the American Institute of Chemical Engineers and similar standards of the American Petroleum Institute and Chemical Manufacturers Association, as well as the practices of safety-conscious chemical companies. In addition, four states--New Jersey, California, Nevada, and Delaware--also have regulations on accidental release prevention.

For facilities to comply with the new risk management planning rule, EPA is encouraging them to incorporate these existing industry standards and approaches that many already practice for chemical safety management.

### Prevention Program Requirements

The elements of the prevention program include the following:

- ◆ Review and documentation of the plant's chemicals, processes, and equipment
- ◆ Detailed process hazard analysis to identify hazards, assess the likelihood of accidental releases, and evaluate the consequences of such releases
- ◆ Development of standard operating procedures
- ◆ Training of employees on procedures
- ◆ Implementation of a preventive maintenance program
- ◆ Management of changes in operation that may impact the safety of the system
- ◆ Reviews before initial start-up of a process and before start-up following a modification of a process
- ◆ Investigation and documentation of accidents
- ◆ Periodic safety audits to ensure that procedures and practices are being followed

## Affected Universe

EPA estimates that approximately 66,000 facilities will be affected by the risk management planning requirements, if proposed amendments to the list rule are adopted. These facilities include manufacturers in the chemical and petrochemical and refining industries, other manufacturers in many manufacturing sectors (e.g., manufacturers of pulp and paper; organic and inorganic chemicals; manufacturers and handlers of chlor-alkalis, plastics and resins, nitrogen fertilizers, and agricultural chemicals), cold storage facilities that use ammonia as a refrigerant including food processors and distributors and refrigerated warehouses, public water treatment systems, chemical retailers, federal facilities, and some service industries.

Many other stakeholder groups will also be at least indirectly affected by the new 112(r) requirements. These include federal agencies and departments (especially OSHA, DOT, DOD, DOE, SBA, FEMA, and Coast Guard) and state and local representatives (particularly State Emergency Response Commissions and Local Emergency Planning Committees, state air offices, local fire departments, emergency management agencies, environmental protection and public health departments, land use planning officials, and natural resource planning and management offices).

Other interested stakeholders will be public interest groups and the environmental community, insurance companies, labor organizations, and international bodies such as the Organisation for Economic Co-operation and Development.

## RMP Registration and Submittal

Facilities covered by the rule will comply by submitting to a central location a registration form along with a risk management plan that describes their risk management program. Facilities will submit their plans electronically, selecting options to be spelled out in guidance. The information will be available immediately to state and local authorities as well as to the

general public and all other stakeholders who may be interested.

The final rule with the requirements for risk management planning was promulgated on June 20, 1996. Submittals of registration forms and risk management plans are due from facilities by June 20, 1999, with updates required every five years.

Should EPA add to the list of regulated substances, the regulations would take effect for newly covered facilities three years after the date on which a substance is first listed.

## OTHER CAA PROVISIONS

### Presidential Review

The CAA requires the President to conduct a review of the current authority of various federal agencies regarding chemical release prevention, mitigation, and response and to report the findings to Congress. The purpose of the review is to clarify and co-ordinate responsibilities and to identify any gaps and/or overlaps that may exist. The President delegated this authority to the EPA Administrator in 1993.

### Hydrofluoric Acid Study

As required by the CAA, EPA conducted a study on the potential hazards of hydrofluoric acid (HF). Transmitted to Congress in the fall of 1993, the study investigates the physical and chemical properties of HF, its hazards in commercial and industrial use, and the types and numbers of facilities in which HF is handled. The document also describes accidents that have resulted in the release of HF, as well as any public and environmental impacts that resulted from these releases. An analysis of scenarios using atmospheric dispersion models investigates potential impacts on the public from a range of worst-case accidental releases. The study also describes the current industry and government controls to prevent accidental releases of HF and to mitigate the potential consequences of accidents through emergency preparedness and response efforts.

## Research Programs

Under the CAA, EPA must establish a program of long-term research on methods and techniques for conducting detailed hazard assessments. The CAA also requires EPA to test substances at the Liquefied Gaseous Fuels Spill Test Facility in Nevada. These tests would develop and validate improved predictive models for atmospheric dispersion, evaluate existing dispersion models, and evaluate technology for mitigation and emergency response.

## New OSHA Standard

On February 24, 1992, OSHA adopted a standard for chemical process safety management in the workplace as required under the CAA 1990 amendments. Just as CAA s.112(r) protects public health and the environment, the OSHA standard is designed to protect workers from accidents involving hazardous chemicals. The OSHA standard applies to facilities that handle certain acutely toxic, highly flammable, and reactive substances.

Requirements of the standard cover safety information on chemicals and processes, a workplace process hazard analysis, periodic audits, standard operating procedures,

training, maintenance, pre-startup safety reviews, management of change, emergency response, and accident investigation.

In formulating the regulatory requirements for risk management planning, EPA incorporated OSHA's Process Safety Management Standard nearly verbatim into the prevention program requirements of CAA s.112(r) for higher risk facilities.

## NATURAL EVOLUTION

**S**ince the mid-1980s, EPA has been working closely with the whole gamut of prevention stakeholders to help reduce the likelihood and severity of chemical accidents. Beginning with the voluntary Chemical Emergency Preparedness Program in 1985, extending to the SARA Title III regulations in 1986, and now culminating in the new Clean Air Act, these efforts address the entire safety continuum from emergency response to preparedness to prevention. In this way, a new partnership involving government, business, and the public is being forged. Working together, each of these groups is playing a key role in preventing accidental releases of hazardous chemicals.

## FOR MORE INFORMATION...

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